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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,266	06/10/2005	Yoshito Tanaka	Q87376	1849
23373 7590 12/28/2007 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER CHEUNG, WILLIAM K	
			ART UNIT 1796	PAPER NUMBER
			MAIL DATE 12/28/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/538,266

**Applicant(s)**

TANAKA ET AL.

**Examiner**

William K. Cheung

**Art Unit**

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 38-47, 49 and 51-55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 38-47, 49 and 51-55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 102907, 111407.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Request for Continued Examination***

1. The request filed on October 29, 2007 for a Request for Continued Examination (RCE) under 37 CFR 1.53(d) based on parent Application No. 10/538,266 is acceptable and a RCE has been established. An action on the RCE follows.
2. In view of the amendment filed May 10, 2007, claims 1-31, 39, 48, 50 have been cancelled, and new claims 54, 55 have been added. Claims 38, 39-47, 49, 51-55 are pending. The examiner acknowledges the receipt of the IDS filed October 19, 2007 and November 14, 2007.

### ***Claim Rejections - 35 USC § 103***

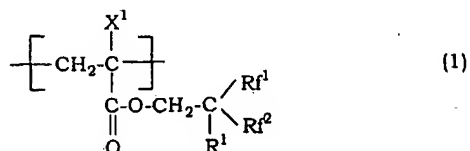
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

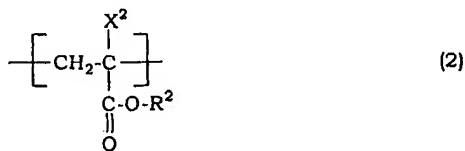
The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 38, 39-47, 49, 51-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inukai et al. (US 5,149,753).

38. (currently amended): A fluorine-containing optical material which comprises a fluorine-containing copolymer comprising from ~~15 to 62 % by mole~~ 23 to 50 % by mole of a structural unit (a) represented by the formula (1):

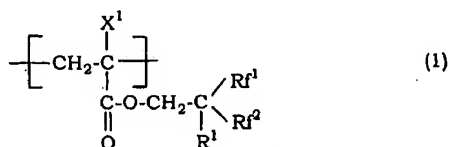


wherein  $\text{X}^1$  is  $\text{CH}_3$  or  $\text{F}$ ;  $\text{Rf}^1$  and  $\text{Rf}^2$  are  $\text{CF}_3$ ;  $\text{R}^1$  is  $\text{CH}_3$ , from ~~12 to 70 % by mole~~ 33 to 70 % by mole of a structural unit (b) derived from methyl methacrylate and from 1 to 40 % by mole of a structural unit (c1) (excluding the structural unit (a)) represented by the formula (2):

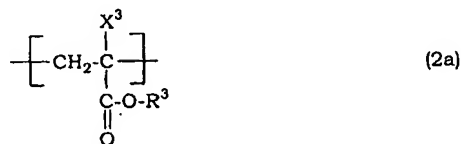


wherein  $\text{X}^2$  is  $\text{H}$ ,  $\text{CH}_3$ ,  $\text{F}$ ,  $\text{CF}_3$  or  $\text{Cl}$ ;  $\text{R}^2$  is a fluoroalkyl group having 4 to 6 carbon atoms.

49. (previously presented): A fluorine-containing copolymer which has a weight average molecular weight of from 10,000 to 1,000,000 and comprises from ~~15 to 62 % by mole~~ 23 to 50 % by mole of a structural unit (a) represented by the formula (1):



wherein  $X^1$  is  $\text{CH}_3$  or  $\text{F}$ ;  $\text{Rf}^1$  and  $\text{Rf}^2$  are  $\text{CF}_3$ ;  $\text{R}^1$  is  $\text{CH}_3$ , from ~~12 to 70 % by mole~~ 33 to 70 % by mole of a structural unit (b) derived from methyl methacrylate and from 1 to 40 % by mole of a structural unit (c2) represented by the formula (2a):



wherein  $X^3$  is  $\text{H}$ ,  $\text{CH}_3$ ,  $\text{F}$ ,  $\text{CF}_3$  or  $\text{Cl}$ ;  $\text{R}^3$  is a fluoroalkyl group having 4 to 6 carbon atoms; the structural unit represented by the formula (1) is excluded.

Inukai et al. (abstract; col. 2, line 15 to col. 3, line 65) disclose a fluoroalkyl methacrylate(structure III)/MMA composition and its application as optical fiber (cladding materials). Regarding the claimed "weight average molecular weight of from 10,000 to 1,000,000", the examiner has a reasonable basis that the claimed molecular weight feature is inherently possessed in Inukai et al. in view of its claimed broad molecular weight range.

The difference between the invention of claims 38, 39-47, 49, 51-55 and Inukai et al. is that Inukai et al. are silent on the mole percent of the fluoroalkyl methacrylate (I) of claim 1 as claimed.

However, Inukai et al. (abstract; col. 2, line 15 to col. 3, line 65) clearly disclose a fluoroalkyl methacrylate(structure III)/MMA composition, however has a lower amount of fluoroalkyl methacrylate as compared to the amount fluoroalkyl methacrylate as claimed. Motivated by the expectation of success of lowering the turbidity of the copolymer, which is presumably caused by the fluoroalkyl methacrylate having a long molecular chain, it would have obvious to one of ordinary skill in art to lower the amount of fluoroalkyl methacrylate having a long molecular chain such as the fluoroalkyl methacrylate compound (I) of Inukai et al. (col. 2, line 33-41) in favor of the higher amount of fluoroalkyl methacrylate compound (III) of Inukai et al. (col. 2, line 57-63) to obtain the mole percent composition of the fluoroalkyl methacrylate composition as claimed.

Further, in view of the substantially identical composition as taught in Inukai et al. as compared to the composition as claimed, the examiner has a reasonable basis that the claimed glass transition temperature, refractive index, and fluorine content features are inherently possessed in Inukai et al. Since the PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicants to show otherwise. In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

Application/Control Number:  
10/538,266  
Art Unit: 1796

Page 6

Regarding the structure of claims 40, 41, 49, 51-53, Inukai et al. (col. 2, line 44-55) clearly disclose a fluoroalkyl methacrylate having the value of m ranging from 4 to 10, which fully encompasses the structures as claimed.

### Response to Arguments

5. Applicant's arguments filed October 29, 2007 have been fully considered but they are not persuasive. Applicants argue that Inukai et al. teach a quadripolymer, instead of the terpolymer as required by applicants' claim 1. However, applicants fail to recognize that claim 1 as written does not support the argued feature "terpolymer" in view of the recitation "comprising" of claim 1 (line 2).

Regarding the structures as claimed and as disclosed in Inukai et al., the examiner has put the structure in tabular form for clarity purposes.

	Structure as claimed in claim 38	Structure as disclosed in Inukai et al.
Structural unit (a)	$\left[ \text{CH}_2 - \underset{\text{C} \begin{array}{l} \text{X}^1 \\ \text{C} \begin{array}{l} \text{O} \\ \text{O} \end{array} \end{array}}{\text{O}} \right] \quad (1)$ <p>X<sup>1</sup> is CH<sub>3</sub> or F; R<sup>f</sup> and R<sup>f</sup> are CF<sub>3</sub>; R<sup>1</sup> is CH<sub>3</sub>.</p> <p>23-50 mol%</p>	$\begin{array}{c} \text{CH}_3 \quad \text{CF}_3 \\   \quad   \\ \text{CH}_2 = \text{C} \quad \text{C} \quad \text{CH}_3 \\   \quad   \\ \text{COO} \quad \text{CH}_2 \quad \text{C} \\   \quad   \\ \text{CF}_3 \quad \text{CF}_3 \end{array} \quad (III)$ <p>II + III = 0-40 wt%</p>
Structural unit (b)	MMA 33-70 mol%	MMA 5-50 wt%
Structural unit (c1)	$\left[ \text{CH}_2 - \underset{\text{C} \begin{array}{l} \text{X}^2 \\ \text{C} \begin{array}{l} \text{O} \\ \text{O} \end{array} \end{array}}{\text{O}} \right] \quad (2)$ <p>X<sup>2</sup> is H, CH<sub>3</sub>, F, CF<sub>3</sub> or Cl; R<sup>2</sup> is a fluoroalkyl group having 4 to 6 carbon atoms.</p> <p>1-40 mol%</p>	$\begin{array}{c} \text{CH}_3 \quad \text{X} \\   \quad   \\ \text{CH}_2 = \text{C} \quad \text{C} \quad \text{Y} \\   \quad   \\ \text{COO} \quad \text{C} \begin{array}{l} (\text{CF}_2)_m \\ \text{X}' \end{array} \end{array} \quad (II)$ <p>wherein X and X' each independently represent hydrogen atom, methyl group or ethyl group, Y is hydrogen atom or fluorine atom and m is an integer of 4 to 10.</p> <p>(0-40 wt%) - wt% III.</p>



Applicants argue that since Inukai et al. specify that formula (I) to have a range ranges from 50 to 95 wt%, nothing in Inukai et al. suggest less than 50 wt% of formula (I). However, applicants fail to recognize that combined wt % of formula (II) and (III) is less than 40 wt%.

Regarding applicants' argument that Inukai et al. solve the problem of turbidity by using solvent and sets a firm lower limit of about 50 weight percent, instead of shortening the alkyl chain to solve the turbidity problem, however, such argument does not necessarily means that one of ordinary skill in art would not solve the turbidity problem by lowering the amount of fluoroalkyl methacrylate having a long molecular chain such as the fluoroalkyl methacrylate compound (I) of Inukai et al. (col. 2, line 33-41) in favor of the higher amount of fluoroalkyl methacrylate compound (III) of Inukai et al. (col. 2, line 57-63) to obtain the mole percent composition of the fluoroalkyl methacrylate composition as claimed.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William K. Cheung whose telephone number is (571) 272-1097. The examiner can normally be reached on Monday-Friday 9:00AM to 2:00PM; 4:00PM to 8:00PM.

Application/Control Number:  
10/538,266  
Art Unit: 1796

Page 9

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David WU can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



William K. Cheung, Ph. D.

Primary Examiner

December 19, 2007

WILLIAM K. CHEUNG  
PRIMARY EXAMINER